A1250-1

CHEMICAL & ENGINEERING

NEWS

$ALARY $URVEY

PLEASE DESCRIBE YOUR MOST RECENT OR CURRENT JOB.

IF YOUR MOST RECENT OR CURRENT EMPLOYER IS NOT AN ACADEMIC INSTITUTION, GO TO SECTION IV.B. ON THE BACK PAGE.

how long have you ... employer?

... years or more

BASE ANNUAL SALARY from PRINCIPAL employer as of March 1, 1985. (DO NOT INCLUDE payments for ... second job, overtime work, summer teaching, or other supplemental earnings or employment.) If zero, please indicate.

$ 39500 per year

If $100,000 or more, please check here

c. SUPPLEMENTAL INCOME from PRINCIPAL EMPLOYER during calendar year 1984. (INCLUDE ... bonus, overtime work, grants administered through employer, summer teaching, or other supplemental earnings.) If zero, please indicate.

$ 0000 per year

If $100,000 or more, please check here

d. SUPPLEMENTAL INCOME from OTHER WORK during calendar year 1984. (INCLUDE ... second job, consulting, contracting, or other employment in your profession.)

$ 1000 per year

If $100,000 or more, please check here

PLEASE EVALUATE THE FOLLOWING STATEMENTS AND INDICATE WHETHER YOU AGREE OR DISAGREE:

e. My employer pays me ... employees who have ...

Strongly agree

Agree

No opinion

Disagree

... chances for PRO... at within my ... se of other emp... perience.

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Strongly agree

Agree

No opinion

Disagree

Strongly disagree

h. Most of the time, I'm ...

Strongly agree

Agree

No opinion

Disagree

Strongly disagree

i. I feel that my job is secure for the next five years.

Strongly agree

Agree

ii. High school

Medical or professional school

College or university where the highest degree offered in chemical science is:

Associate

Bach...

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My institution...

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Yes

... tract is for a period of:

... on of your total academic year ... evoted to:

	1/4 or less	1/3	1/2	2/3	3/4	full-time
	☐	☐	☐	☒	☐	☐
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	☐	☒	☐	☐	☐	☐
	☐	☐	☐	☐	☐	☐
Research	☐1	☐2	☐3	☐4	☐5	☐6

... ur principal professional activity durin... of 1984?

... research or study

... dy/academic

... istrat...

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... cademic employment

Other

STOP. YOU HAVE COMPLETED THE QUESTIONN... PLEASE USE THE BLANK SPACE ON THE BACK ... FORM FOR COMMENTS.

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CHEMICAL & ENGINEERING NEWS

Volume 63, Number 27
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JULY 8, 1985

News of the Week

■ **Wall Street analysts see an increase ahead in chemical prices but chemical makers aren't so optimistic.** Page 6

■ **Witco Chemical found guilty of violating age discrimination act in suit involving 1983 firings.** Page 7

■ **A fifth supercomputer center has been set up—Carnegie-Mellon, University of Pittsburgh, and Westinghouse Electric.** Page 7

■ **National Library of Medicine's TOXNET, computer-accessed system to retrieve data on toxicology, is now available.** Page 8

■ **Counsel for former Hoffmann-La Roche employees suing the firm for age discrimination may add breach of contract to the charge.** Page 8

Business

Pfizer's Laubach looks at role of President's Commission on Industrial Competitiveness in high technology's future. **Page 10**

Biotechnology stock prices have surged back, although the rebound has been somewhat selective. **Page 14**

International Business

Indian and U.S. labor activists are trying to draw international attention to plight of Bhopal disaster victims. **Page 16**

Global environmental objectives were adopted at recent meeting in Paris of environmental ministers from OECD and EEC. **Page 17**

Government

Murder in the workplace: Illinois court decision against three U.S. corporate officials may spur similar prosecutions. **Page 24**

Science

Rocket launched to rendezvous with Halley's comet next spring will beam back valuable scientific information. **Page 27**

Electrolytic reduction of carbon monoxide to methane achieved by scientists at SRI International. **Page 29**

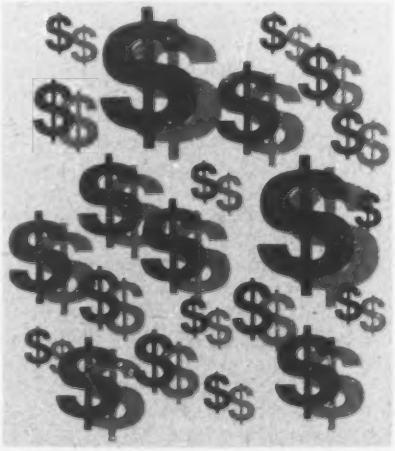
ACS News

Recent mass firings of chemical professionals reflect relatively harder economic times in the industry. **Page 40**

Letters 4

Concentrates
Business 9
Government 18
Science/Technology 26

The Departments
New Products 36
People 43
Awards 43
Newscripts 56



Salary Survey

Chemists are holding their own in salaries and employment this year. Page 30

Biotechnology stocks regain lost ground

Jaded with the promises of biotechnology-based companies, investors turned a cold shoulder to many of the gene splicers and antibody makers last year. Stock prices tumbled throughout the industry. At the end of 1984, C&EN's biotechnology stock index, which tracks the stock market performance of 12 firms representing a cross section of the biotechnology-related industry, was about 30% below its late 1983 level.

Then something happened. The year turned, and perhaps following some idea that a new year calls for a new look, the market regained its enthusiasm. Whatever the reason, biotechnology stock prices surged. Between New Year's Day and the end of February, the biotechnology stock index rose nearly 50%. Since then, excluding a slump during the first half of March, it has remained more or less on the plateau reached during the first two months of the year.

Unlike the 1984 slump, however, which was nearly universal, the rebound has been selective. Shares of Hybritech, for instance, which lost 15% of their value last year, are now worth 80% more than they were at the end of the first half of 1984. Other share prices are also far higher than they were a year earlier: Centocor, up 103%; Genentech, up 37%; Amgen, up 39%; and Genetic Systems, up 28%. During May, the stock prices of Amgen and Hybritech hit all-time company highs, while Centocor closed the second quarter at a record high.

On the other hand, some companies' stock continues to languish. Shares of Monoclonal Antibodies, for example, are now worth 25% less than they were a year ago and have not increased in price since the end of 1984. In mid-May, the stock price hit a record low. The price of Collaborative Research stock is down 30% on an annual basis and has fallen slightly since the first of this year. Similarly, Molecular Genetics has lost value in the stock market this year; its June 28 share price was 34% below the year-earlier level. The price of a share of Bio-Response, on the other hand, though 23% below its year-ago level, has risen well since the beginning of 1985.

Continuing its nearly unbroken rise in the market is Applied Biosystems, which sells instruments and other supplies to biotechnology companies. Having risen 61% in value over the course of 1984, the company's stock split two-for-one at the end of March 1985; the price is now some 98% above its year-earlier level.

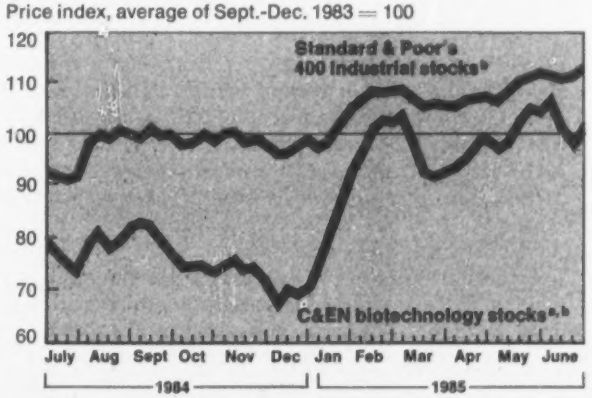
At the opposite end of the spectrum is Genex, which, buffeted by business reverses (C&EN, June 24, page 8), sank to an all-time low on the stock market last month. Its price per share is now 68% below its year-earlier level. Much of the decline in the price of a share of Genex came after the stock market learned that the company would lose its sole customer for L-phenylalanine, its major product, after the current sales contract expires this October. During just the second quarter, the stock price dropped 48%, the ninth worse performance by any stock traded over the counter.

At the beginning of 1985, analysts predicted that the stock market would begin sorting out those companies with clear indications of substantial, near-term products and solid business plans from those that either seemed likely to remain development-stage companies for some time to come or failed to begin reporting at least token earnings. To a certain extent, investors have responded accordingly.

Hybritech, for instance, reported a 97% increase in revenues as well as net income for the first three months of 1985. Similarly, Centocor's revenues rose 77% in the first quarter with a rise in profit, and Amgen, although still reporting a net loss, posted an 89% jump in revenues. Genentech, although still without proprietary products, reported a first-quarter revenue gain of 32% and a net income increase of 86%.

David Webber, New York

Biotechnology stocks surged in early 1985, but lagged in market's 18-month growth . . .



a Based on stock prices for Amgen, Applied Biosystems, Biogen, Centocor, Cetus, Damon Biotech, Genentech, Genetic Systems, Genex, Hybritech, Molecular Genetics, and Monoclonal Antibodies. b Reindexed to average for Sept.-Dec. 1983 period to show relative change. Prices as of Friday close each week.

. . . and individual stock performance was greatly mixed

Company	Latest price[a]	% change[b]	52-week range High	52-week range Low
Amgen	8	39%	8 1/2	3 3/4
Applied Biosystems[c]	24	98	27 3/8	10
Biogen	7 1/2	−12	9	4 1/4
Bio-Response	6 3/4	−23	10 3/8	3 5/8
California Biotech	11 1/4	55	12	4 1/4
Centocor	18 1/2	103	18 1/2	8
Cetus	10 3/4	−5	13 1/8	8 5/8
Collaborative Research	4 1/8	−30	6 1/2	3 5/8
Damon Biotech	6 3/8	−12	7 5/8	4 1/8
Genentech	47 1/4	37	56 1/2	28 3/4
Genetic Systems	7 3/8	28	8 5/8	4 1/2
Genex	2 7/8	−68	13	2 1/4
Hybritech	25 1/4	80	26 1/4	11
Molecular Genetics	6 3/4	−34	10 3/4	6
Monoclonal Antibodies	9	−25	12	7 3/4

a As of close on Friday, June 28, 1985. b June 29, 1984, to June 28, 1985. c Adjusted for 2-for-1 stock split in March 1985.

Economic Status of Chemists Shows Modest Gains This Year

Salaries are up about 5%, nearly in line with rising living costs, and rate of unemployment has eased slightly from last year

The economic well-being of U.S. chemists has improved in the past year. A larger proportion of them are working full time than in either of the previous three years. And salaries are higher. The improvement, however, is slight at best.

The most recent survey of the employment status of members of the American Chemical Society shows that only 1.4% of them were unemployed but looking for jobs as of last March. That's the lowest rate of unemployment since 1981 and down from 2.2% just two years ago. It's a rate that also is far below the 7.2% unemployment rate for the overall U.S. labor force last March, as well as the rate of 2.0% for all professional workers. All in all, unemployment among ACS members has not been below this year's level during the past decade and a half except during a three-year period from 1979 to 1981.

Also down last year is the percentage of chemists working on postdoctoral or other fellowships. This year just under 2% of chemists held such positions; a year earlier nearly 3% did so. The level of postdoc employment has not been lower any time in the past 10 years.

Salaries, meanwhile, have risen modestly for chemists from a year ago. The median annual salary for Ph.D. chemists responding to the ACS survey is up 5% to $44,000. (The median is the salary that is exceeded by 50% of all respondents.) That's the same increase as reported by Ph.D.s in last year's survey but slightly lower than the rate of growth over the past decade. The 4% increase reported by chemists whose highest degree is a B.S. and the 6% gain for chemists with an M.S. are a bit higher than the increases those chemists reported in 1984. For B.S. chemists, however, the rise in median salary this year is also less than the annual rate of increase for the past 10 years.

As has been true throughout the 1980s, moreover, increases in median salaries have been largely offset by the rising cost of living. After adjustment for changes in consumer prices, in fact, the median salary for all Ph.D. chemists is just 6% higher than it was in 1980, and that for M.S. chemists is up a mere 5%. For chem-

Unemployment this year is highest for chemists who are women or lack a graduate degree

	Chemists									
		By sex		By highest degree			By minority status		Chemical	All
Employment status[a]	Total	Men	Women	B.S.	M.S.	Ph.D.	Minority[b]	Nonminority	engineers	members[c]
Employed full time	94.4%	95.5%	88.6%	95.2%	95.6%	93.6%	91.5%	94.7%	94.9%	94.3%
Employed part time	1.5	1.0	4.1	1.4	1.9	1.4	1.2	1.5	1.8	1.5
Postdoctoral or fellowship	1.9	1.8	2.6	0.1	0.0	3.3	4.8	1.8	0.1	1.7
Unemployed										
Seeking employment	1.4	1.2	2.4	2.0	1.6	1.1	2.1	1.3	2.1	1.6
Not seeking employment	0.7	0.5	2.4	1.3	0.9	0.5	0.3	0.8	1.1	0.8

a As of March 1, 1985. b Black, Hispanic, American Indian, Alaskan native, Asian, Pacific Islander, or other. c Includes ACS members whose highest degree and present work are in neither chemistry nor chemical engineering. Source: ACS survey

Growth in salaries in the past year is a bit less than was typical during the past decade

												Annual change		
$ Thousands	1985	1984	1983	1982	1981	1980	1979	1978	1977	1976	1975	1984–85	1980–85	1975–85
CHEMISTS' MEDIAN SALARIES[a]														
B.S.	$32.0	$30.9	$30.0	$28.5	$27.5	$25.0	$23.5	$22.0	$21.0	$19.8	$19.0	4%	5%	5%
M.S.	36.0	34.0	33.0	31.6	30.0	26.0	25.0	24.0	22.0	20.5	19.8	6	7	6
Ph.D	44.0	42.0	40.0	37.5	35.0	31.2	29.0	27.4	26.0	24.7	23.0	5	7	7
All chemists	40.0	38.0	36.0	34.7	32.0	28.9	na	na	na	na	na	5	7	na

a As of March 1. na = not available. Source: ACS survey

ists with no more than a B.S. degree, moreover, this year's median is 4% less than it was five years ago.

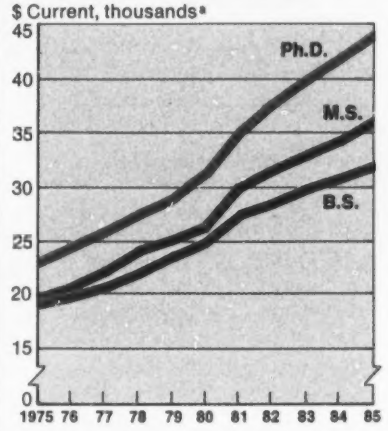
The median provides a simple but also quite rough indication of how any individual chemist is doing with regard to annual income, of course. The chemist earning at the median is a hypothetical person who is locked year by year into the same general level of age and experience. His or her career does not progress as a result of added experience, increased responsibilities, more subordinates, or changing jobs, as does the career of a blood-and-breath chemist.

Experience is a key factor affecting salaries. This is especially the case during the first 20 to 30 years after undergraduate training. Thus the median salary for chemists whose highest degree is a B.S. and who earned that degree 20 to 24 years ago is 85% higher than that for chemists who obtained their degree in the past 12 months. However, the median for B.S. chemists who graduated 40 or more years ago is just 15% above that for B.S. chemists who are 20 to 24 years out of undergraduate school.

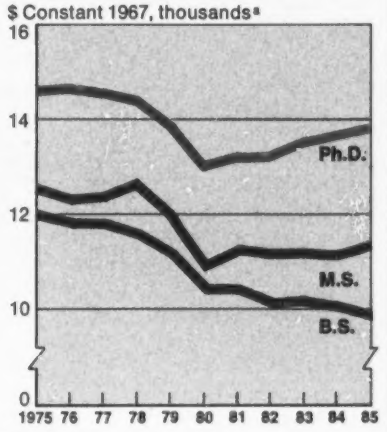
Increases in salaries with experience somewhat mitigate the impact of rising living costs. Thus a chemist who graduated with a B.S. in 1979 and went to work in industry has a median salary this year that is about 60% higher than the median had been for this chemist in 1980. Even after adjusting for inflation, the increase in median salary is 20%. For older B.S. chemists—those who obtained their B.S. degree 25 or more years ago—however, this year's median salaries are only about 5% higher than the medians had been for them in 1980 after taking into account increases in the cost of living.

This year's survey of the economic status of chemists, undertaken by the ACS Office of Statistical Services, differs from the surveys of previous years in that questionnaires were sent to all ACS members in the U.S. who are under 70 years of age and neither retired nor students. In the past, a random sample of such members was surveyed. The results of the 1985 survey are based on nearly 45,000 responses, therefore, rather than the 10,000 to 15,000 responses in other recent surveys. Because of the larger number of responses, more-detailed data are available for a

Although chemists' salaries have been rising steadily...



...they have barely kept up with inflation since 1980



a Median salary of chemists as of March 1 each year. **Source:** ACS survey

Salaries tend to reach a plateau 30 years after graduation from undergraduate school

Years since B.S. degree	Annual salaries of nonacademic chemists ($ thousands)[a]										
	0 to 1	2 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 or more	Overall
B.S.											
90%	$28.6	$29.9	$36.0	$41.8	$49.7	$54.0	$60.0	$63.7	$60.0	$67.2	$50.1
75%	25.0	26.4	32.0	37.2	42.0	46.0	50.0	51.7	52.0	56.0	41.0
50%	21.6	23.1	27.7	33.0	37.0	40.0	42.4	44.5	43.0	46.0	33.0
25%	15.6	20.0	24.0	29.0	32.0	33.2	37.0	38.0	36.9	37.5	25.4
10%	14.3	17.5	21.0	23.9	27.0	26.3	29.6	32.6	30.2	28.0	21.0
M.S.											
90%	—	34.7	39.6	45.0	52.8	60.0	65.0	68.7	70.0	67.7	57.0
75%	—	30.0	33.8	39.3	45.0	48.7	53.2	57.0	54.1	57.0	47.0
50%	—	27.6	30.0	34.8	38.0	43.0	44.8	47.0	47.5	47.0	38.0
25%	—	24.1	27.0	30.0	32.0	38.0	38.2	39.8	38.4	38.0	30.7
10%	—	21.5	24.0	25.8	27.4	30.6	32.0	32.9	30.0	27.8	26.0
Ph.D.											
90%	—	—	43.0	52.0	62.0	67.2	71.5	80.0	81.4	79.6	69.2
75%	—	—	40.0	47.5	54.0	60.0	62.3	69.0	70.0	68.0	58.3
50%	—	—	38.0	42.0	48.0	53.0	55.0	59.5	58.0	58.0	49.0
25%	—	—	35.5	38.5	42.0	45.1	48.0	50.0	49.0	48.0	40.0
10%	—	—	33.2	34.9	36.0	39.0	39.8	40.0	40.0	39.0	36.0

a As of March 1, 1985. **How to read this table:** Using, as an example, nonacademic B.S. chemists two to four years after receiving their B.S. degree, 90% of these chemists have annual salaries of $29,900 or less, 75% have annual salaries of $26,400 or less, 50% have annual salaries of $23,100 or less, 25% have annual salaries of $20,000 or less, and 10% have annual salaries of $17,500 or less, as of March 1, 1985. **Source:** ACS survey

Salaries are appreciably higher for professors teaching at Ph.D.-granting schools

Years since B.S. degree	Median salary ($ thousands)[a]								
	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 or more	Overall
Ph.D. CHEMISTS EMPLOYED IN ACADEMIA									
Professors with 11- or 12-month basic contract at Ph.D.-granting schools									
Professor	—	—	$48.0	$52.0	$52.0	$55.0	$55.0	$60.0	$54.2
Associate professor	—	$35.5	39.5	40.0	38.0	42.8	(43.6)	(44.8)	40.0
Assistant professor	$28.0	31.0	32.2	(33.1)	—	—	—	—	31.0
Professors with 9- or 10-month basic contract at Ph.D.-granting schools[b]									
Professor	—	—	53.2	49.9	51.3	54.1	55.4	61.1	53.4
Associate professor	—	36.7	39.1	39.1	39.1	39.0	40.9	(39.2)	39.1
Assistant professor	30.9	31.8	31.8	(29.9)	(33.9)	—	—	—	31.8
Professors with 11- or 12-month basic contract at non-Ph.D.-granting schools									
Professor	—	—	(39.0)	42.6	44.0	43.3	44.0	49.0	43.0
Associate professor	—	—	25.0	34.4	(32.5)	(35.0)	—	—	31.0
Assistant professor	(22.5)	25.0	(23.0)	(22.0)	—	—	—	—	23.0
Professors with 9- or 10-month basic contract at non-Ph.D.-granting schools[b]									
Professor	—	—	36.2	40.0	42.8	42.8	45.1	46.4	42.6
Associate professor	—	30.5	31.8	32.9	36.7	36.4	36.7	(41.7)	33.0
Assistant professor	26.6	26.8	28.8	28.1	(29.3)	(33.1)	—	—	26.9

a As of March 1, 1985. b Salaries of professors working on a 9- or 10-month basic contract have been adjusted to put them on an annualized basis. **Note:** Where no salary data are shown, sample is too small to provide a meaningful figure; data in parentheses are from relatively small samples, as well, and should be treated with caution. **Source:** ACS survey

broader array of chemists. This is especially true with the salary data for industrial chemists reported in the table on page 33 and the salary data for academic chemists in the table above.

In general, though, the results from this year's survey are similar to those of previous years. Chemists working in private industry tend to earn more than those employed elsewhere, with the greatest difference being between industrial chemists and academic chemists.

Managers in general earn more than chemists involved with research and development or in production assignments; marketing positions fall between. In industry, too, polymer chemists and agricultural chemists are more likely to be on the top of the salary ladder; analytical chemists and biochemists tend to be at the bottom. In addition, chemists working for petroleum firms get paid more on the average than their colleagues in other types of companies.

Because of the large number of responses, this year's survey provides information on some groups of chemists who are too few to have been characterized previously. One example is the elite group with the highest salaries. About 1.5% of nonacademic chemists report salaries of more than $100,000 a year. (Only a handful of academic chemists earn that much.) As would be expected, this is an experienced group; more than 80% finished their undergraduate training more than 25 years ago. They are most likely to have a Ph.D.; two thirds do, compared with slightly less than 50% of all nonacademic chemists. It is not surprising, either, that more than 80% are managers, with almost half of these being managers of R&D. In addition, it is a predominately male group; only 2% of the nonacademic chemists with salaries exceeding $100,000 are women, although 15% of all nonacademic chemists are women.

In general, of course, salaries tend to be lower for women than men. In part, this is because women are less likely to be among the more experienced chemists whose income is higher. Less than a third of women chemists working in industry, for example, earned their B.S. degree 15 or more years ago, but nearly two thirds of the men did so. But even when the data are adjusted to compensate for differences in experience, men's salaries on the average are 10 to 20% higher than those of women, depending on their employer. The difference is greatest among older chemists, moreover. Median salaries for men and women working in industry are very similar for those who

Women's salaries overall are below those of men, wherever they work

Mean salary, $ thousands[a]	B.S.				M.S.				Ph.D.			
	All chemists	Men	Women	Women as % of men	All chemists	Men	Women	Women as % of men	All chemists	Men	Women	Women as % of men
EMPLOYER												
Private industry	$35.7	$36.4	$31.8	87%	$40.6	$41.5	$37.0	89%	$51.8	$52.1	$46.2	89%
Academic	—	—	—	—	30.0	30.9	26.1	84	39.6	40.5	32.3	80
Government	35.7	36.2	32.7	90	40.9	41.5	36.5	88	50.5	50.8	43.6	86
Other	31.9	32.7	28.8	88	35.9	37.0	31.8	86	45.8	46.3	41.4	90

a As of March 1, 1985; to facilitate comparison, salaries are adjusted for differences in the average experience for each group. **Source:** ACS survey

Top salaries go to managers and those working in polymer or agricultural chemistry

Years since B.S. degree		Median salary ($ thousands)[a] 0 to 1	2 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34	35 to 39	40 or more	Overall
CHEMISTS EMPLOYED FULL TIME IN INDUSTRY												
Sex												
Men	B.S.	$22.2	$24.0	$28.8	$34.0	$38.6	$41.1	$44.0	$44.6	$45.0	$48.0	$36.0
	M.S.	—	26.4	30.5	35.0	40.0	44.8	47.4	50.0	49.6	51.0	40.0
	Ph.D.	—	—	38.0	42.2	49.6	55.0	58.0	60.0	60.0	60.0	50.0
Women	B.S.	22.0	23.5	27.3	30.0	33.0	36.0	36.0	38.0	37.9	41.0	27.0
	M.S.	—	26.5	29.9	33.7	36.0	38.7	41.5	(45.6)	43.0	—	32.4
	Ph.D.	—	—	37.2	40.0	45.0	48.2	46.2	(50.0)	(60.0)	—	40.0
Work function												
General management	B.S.	—	(27.5)	33.0	40.0	41.5	45.0	48.0	50.5	51.2	47.0	43.6
	M.S.	—	—	(33.0)	41.2	45.0	53.5	58.0	54.5	50.0	(50.0)	50.0
	Ph.D.	—	—	—	(48.2)	54.5	57.5	66.5	66.4	65.0	68.5	61.0
R&D management	B.S.	—	(24.8)	34.0	39.2	42.5	49.0	51.5	50.0	54.0	58.0	46.3
	M.S.	—	—	36.6	40.5	45.0	50.0	54.0	55.2	55.3	(57.0)	50.0
	Ph.D.	—	—	42.0	49.1	55.0	60.0	62.8	70.0	70.0	65.0	60.0
Basic research	B.S.	22.1	24.0	27.5	31.8	35.8	41.0	(38.0)	37.0	(43.5)	—	27.0
	M.S.	—	26.0	28.5	32.8	39.0	36.2	(44.6)	45.0	(50.9)	—	33.0
	Ph.D.	—	—	38.0	42.0	47.0	54.0	56.5	60.0	60.0	56.2	44.0
Applied research[b]	B.S.	23.0	24.0	28.0	32.0	36.0	37.6	42.0	43.0	42.0	45.0	31.5
	M.S.	—	27.0	30.0	34.0	38.5	41.2	42.5	45.0	44.9	43.5	36.0
	Ph.D.	—	—	37.7	41.0	46.0	50.4	53.0	55.0	55.2	55.0	45.0
Production[c]	B.S.	20.0	23.0	27.0	32.0	36.0	39.5	40.0	39.3	40.0	(32.5)	30.0
	M.S.	—	(24.3)	30.0	35.0	37.0	39.5	45.0	45.0	42.2	—	36.0
	Ph.D.	—	—	35.8	42.0	44.3	48.0	56.5	52.0	(58.0)	—	45.0
Marketing[d]	B.S.	(25.0)	24.0	31.0	37.8	41.3	42.0	46.0	45.0	45.0	53.5	40.0
	M.S.	—	—	33.5	39.0	39.0	47.5	46.0	(55.0)	50.0	—	41.2
	Ph.D.	—	—	—	44.5	50.0	53.0	52.0	60.0	(62.5)	(58.0)	52.8
Work specialty												
Analytical chemistry	B.S.	21.3	23.6	27.8	33.0	36.0	40.0	41.3	42.0	45.0	43.0	31.9
	M.S.	—	25.8	29.5	34.1	38.0	43.6	45.0	46.5	46.4	(44.5)	36.0
	Ph.D.	—	—	37.4	43.0	49.0	50.0	54.0	57.8	57.5	(52.5)	45.5
Agricultural chemistry[e]	B.S.	—	(27.9)	31.0	32.7	38.2	(40.0)	(44.5)	50.0	47.5	—	37.0
	M.S.	—	—	30.0	33.6	42.2	(49.5)	(52.8)	(46.0)	(48.2)	—	42.0
	Ph.D.	—	—	—	(42.0)	51.0	54.0	58.0	60.6	(56.5)	(52.6)	53.0
Biochemistry	B.S.	(20.9)	22.0	25.9	(30.7)	(30.0)	(31.8)	—	—	—	—	28.0
	M.S.	—	—	27.5	32.0	(34.6)	(39.0)	(42.0)	—	—	—	34.0
	Ph.D.	—	—	36.7	42.0	46.0	54.0	58.0	63.8	60.0	(58.0)	46.7
Inorganic chemistry	B.S.	—	(25.9)	30.0	34.0	(33.0)	(38.2)	44.7	(42.0)	48.5	(43.5)	35.7
	M.S.	—	—	30.6	(36.5)	(37.5)	—	(43.0)	—	(59.5)	—	39.2
	Ph.D.	—	—	39.0	42.0	46.0	54.5	55.0	51.8	60.5	(65.0)	46.0
Medicinal chemistry[f]	B.S.	(22.8)	23.5	27.0	30.8	40.0	40.0	43.5	45.0	40.0	(52.2)	30.8
	M.S.	—	(26.6)	30.0	34.1	40.5	41.5	(43.4)	(44.3)	(48.0)	—	36.0
	Ph.D.	—	—	37.5	42.5	47.5	57.0	58.5	61.1	55.0	(60.0)	48.0
Organic chemistry	B.S.	22.5	24.0	28.0	34.0	36.7	41.0	47.3	45.0	42.0	52.5	34.0
	M.S.	—	25.2	28.8	33.8	37.5	41.6	49.7	46.5	50.0	51.0	38.0
	Ph.D.	—	—	37.8	41.2	48.0	55.0	56.0	60.0	59.0	58.6	48.0
Physical chemistry	B.S.	(19.9)	23.0	27.0	31.8	40.0	(39.8)	(46.5)	42.0	48.5	(42.5)	33.3
	M.S.	—	(27.0)	30.2	35.0	38.8	(44.5)	(48.0)	(48.0)	46.0	—	39.0
	Ph.D.	—	—	37.6	40.0	51.0	54.8	61.5	64.7	60.0	(60.7)	49.0
Polymer chemistry	B.S.	23.0	24.0	30.2	37.0	43.2	43.0	46.0	48.0	46.0	50.0	37.4
	M.S.	—	28.0	32.0	38.7	42.0	44.3	45.3	50.1	50.0	49.5	42.0
	Ph.D.	—	—	38.0	42.0	50.2	55.2	58.2	60.0	59.5	62.0	51.0
Theoretical chemistry	B.S.	—	(22.6)	28.5	(33.0)	(37.0)	(41.0)	—	—	(37.9)	—	33.0
	M.S.	—	—	(28.0)	34.6	38.5	(42.1)	(43.0)	—	(55.0)	—	37.6
	Ph.D.	—	—	38.0	42.9	50.0	60.0	60.0	64.0	66.0	62.0	51.9

a As of March 1, 1985. b Includes development. c Includes quality control. d Includes purchasing, technical service, and economic evaluation. e Includes food chemistry. f Includes pharmaceutical chemistry. **Note:** Where no salary data are shown, sample is too small to provide a meaningful figure; data in parentheses are from relatively small samples, as well, and should be treated with caution. **Source:** ACS survey

Joblessness falls to the lowest level since 1981 for chemists; postdocs also decline

Employment status[a]	1985	1984	1983	1982	1981	1980	1979	1978	1977	1976	1975
Employed full time	95.2%	93.7%	93.5%	94.9%	95.6%	95.9%	95.0%	95.7%	95.4%	94.7%	95.0%
Employed part time	1.5	1.7	1.7	1.4	1.1	1.0	2.0	1.0	1.1	1.3	1.3
Postdoctoral or fellowship	1.9	2.9	2.6	2.2	2.2	2.2	1.9	1.9	2.1	2.2	2.0
Unemployed	1.4	1.7	2.2	1.5	1.1	0.9	1.1	1.4	1.5	1.9	1.6

a As of March 1; excludes unemployed chemists not seeking employment. Source: ACS survey

Unemployment evenly low across various jobs

	% of chemists in category	% unemployed[a]
MOST RECENT EMPLOYER		
Industry	45%	1.5%
Academic	27	1.3
Government	13	1.4
Other	15	1.2
MOST RECENT WORK FUNCTION		
R&D[b]	35%	1.1%
Teaching	27	1.3
R&D management	12	1.2
Production[c]	8	2.1
General management	5	1.6
Marketing[d]	4	1.7
Other	9	1.9
MOST RECENT WORK SPECIALTY		
Analytical	22%	1.5%
Organic	15	1.0
Polymer	13	1.2
Biochemistry	8	1.8
Agricultural[e]	7	1.6
Inorganic	6	1.3
Theoretical	4	2.4
Physical	4	1.7
Medicinal[f]	4	1.5
Other chemistry	14	1.3
Nonchemistry	4	1.0

a As of March 1, 1985; excludes unemployed chemists not seeking employment. b Nonacademic only. c Includes quality control. d Includes purchasing, technical service, and economic evaluation. e Includes food chemistry. f Includes pharmaceutical chemistry. Source: ACS survey

Pay is highest for chemists working in the oil industry

Industry	% of industrial chemists: All chemists	B.S.	M.S.	Ph.D.	Mean salary ($ thousands)[a]: B.S.	M.S.	Ph.D.
Chemical	33%	27%	28%	40%	$36.0	$43.2	$52.1
Pharmaceutical[b]	16	15	18	16	34.4	38.9	51.6
Coatings	6	8	7	4	35.2	35.9	47.6
Petroleum	6	4	6	7	40.5	46.0	58.7
Food	4	5	5	3	33.4	41.7	43.8
Metals and minerals	3	3	3	2	32.0	33.3	51.1
Rubber	2	3	2	2	37.0	34.0	48.2
Other manufacturing	23	24	23	22	35.7	41.3	46.6
Nonmanufacturing	7	10	8	5	33.5	39.2	48.8

a As of March 1, 1985; to facilitate comparison, mean salaries are adjusted for differences in the average experience for each group. b Includes personal care products. Source: ACS survey

received their undergraduate degree less than 10 years ago, for example. But for chemists who are 25 to 29 years out of undergraduate school, the divergency in median salaries ranges from a 14% advantage for men with an M.S. degree to a 25% advantage for men with a Ph.D. compared to women with the same degrees.

Not unexpectedly, therefore, women seem less satisfied than men with their salaries, as well as with their chances for promotion. The ACS survey indicates that 25% of the women consider that they are not paid fairly, compared with fellow employees; 20% of the men think their salaries are unfair. As for promotions, 27% of the women but just 19% of the men believe that their chances for professional advancement as scientists are poorer than those of fellow employees who are similarly qualified. And 33% of the women, compared to 22% of the men, judge their chances for managerial advancement are less than those of like qualified colleagues. These perceptions of unequal treatment by employers are slightly lower than those found in a similar survey of ACS members five years ago.

Women also are more likely to be unemployed, as has been true in previous years as well. The unemployment rate for women chemists is 2.4%, double that for men, and down only slightly from last year's 2.6%. Women, too, are more likely than men to be working part-time or at postdoctoral fellowships.

This year's ACS survey also provides a comparison between the marital status of men and women working full-time as chemists. As of last March, 43% of the women but only 15% of the men were single; 31% of the women, compared to 11% of the men, had never been married. This difference to a large degree probably stems from the women as a group being younger; nearly 40% of women chemists, compared with about 15% of men chemists, received their B.S. degree less than 10 years ago. Of the women who are married, 58% are married to scientists, including 32% to chemists. Among married men, only 22% are married to scientists and 10% to chemists.

One unexpected finding of this year's survey is the apparent endangered species status of environmental chemists. Respondents were asked to indicate the one scientific specialty most related to their work. In recent years, about 6% considered themselves environmental chemists. This year, however, less than 1% did so, and more than two thirds of those few are academic chemists.

Later this month, the ACS Office of Statistical Services will publish a detailed compilation of results from its 1985 survey of the economic status of ACS members. This report, "Salaries 1985," can be purchased from Distribution, Room 210, American Chemical Society, 1155—16th St., N.W., Washington, D.C. 20036. The office also will be publishing later this year a special study dealing with women chemists, as well as reports on minority chemists and members of selected ACS local sections. □